

Work Order ID 74829

October-11-11 7:06:24 AM

74829

Page 1

Item ID: D3510-041

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Insert Assembly

Start Date: 10/11/11 Start Qty: 2.00

2

Cust Item ID:

Required Date: 10/14/11 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals: Process Plan: 

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan Accept Reject Reject Insp.
Code Qty Qty Number Stamp

Draw Nbr

Revision Nbr

D3510

Rev C

0.00

100

100

MORI SEIKI CNC LATHE LARGE

0.00

Mori Seiki

Memo

Mori Seiki CNC Lathe Large

Turn as per Dwg D3510 & Folio FA652
Ensure that DT8877A Plug fits in tube.

0.00

110

QC2- Inspect parts off machine FAI/FAIB

110

QC

Memo

0.00

Quality Control



mm.L 11/10/11



mm.L 11/10/11

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 74829

October-11-11 7:06:24 AM

74829

Page 2

Item ID: D3510-041

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Insert Assembly

Start Date: 10/11/11 Start Qty: 2.00 ***2***

Cust Item ID:

Required Date: 10/14/11 Req'd Qty: 2.00 ***2***

Customer:

Reference:

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run Start *NR1*
	QC:	Date:	SPC (Y/N):	Date:	Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120

0.00

120

HAAS CNC VERTICAL MACHINING #1

HAAS 1

Memo

0.00

HAAS CNC vertical machine #1

1-Machine as per Folio FA652 and Dwg D3510

FK, 11/10/12.

2-Deburr

RG 11-10-12

Note: *-.250" dia holes are to be opened to finish size by skidtube dept. and missing .266" dia hole is to be drilled by skid dept. *****

130

0.00

130

QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

140

0.00

140

QC8- Inspect parts - second check

QC

Memo

0.00

Quality Control

FK 11-10-12

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 74829

74829

Page 3

October-11-11 7:06:24 AM

Item ID: D3510-041

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Insert Assembly

Start Date: 10/11/11 Start Qty: 2.00

2

Cust Item ID:

Required Date: 10/14/11 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan Accept Reject Reject Insp.
Code Qty Qty Number Stamp

150

0.00

150

Skidtubes

Skidtubes

Memo

0.00

1-Drill .266" Dia hole using DT8877B as per Dwg D3510

2-Counter bore wearplate holes as per Dwg d3510.

3-open wearplatre holes to .297 as per Dwg D3510.

4-Deburr

Handwritten: 11-10-13 (2)

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

Handwritten: 8/10/13 (2)

170

Chemical Conversion Coat per QSI005 4.1

0.00

170

HandFinish

Memo

0.00

Hand Finishing

Handwritten: 2 BR 11-10-13

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 74829

October-11-11 7:06:24 AM

74829

Page 4

Item ID: D3510-041

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Insert Assembly

Start Date: 10/11/11 Start Qty: 2.00

2

Cust Item ID:

Required Date: 10/14/11 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan Accept Reject Reject Insp.
Code Qty Qty Number Stamp

180

QC3- Inspect Part Finish

0.00

180

QC

Memo

0.00

Quality Control

2x DM-11/10/13

190

HandFinishing

0.00

190

HandFinish

Memo

0.00

Hand Finishing

Install inserts as per Dwg D3510

2 BR 11-10-13

200

QC5- Inspect part completeness to step on W/O

0.00

200

QC

Memo

0.00

Quality Control

Sub 101 14

(12)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 74829

October-11-11 7:06:24 AM

74829

Page 5

Item ID: D3510-041

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube Insert Assembly

Start Date: 10/11/11 Start Qty: 2.00

2

Cust Item ID:

Required Date: 10/14/11 Req'd Qty: 2.00

2

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

Identify as per dwg & Stock Location: _____

0.00

210

Packaging

Memo

0.00

Packaging

P PP 72343
PP 72347

11/10/11

220

QC21- Final Inspection - Work Order Release

0.00

220

QC

Memo

0.00

Quality Control

11/10/14

11-10-14

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

October-11-11 7:06:24 AM

Page 1

Work Order ID: 74829

Parent Item: D3510-041

Start Date: 10/11/11

Required Date: 10/14/11

Parent Item Name: Skidtube Insert Assembly

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP Rev:A New Issue 06-10-12 JLM
IPP Rev:B ALES-1032 and ALS4-428 insert now used ECN 1036 DD
IPP Rev:C Revised manufacturing steps for LG 08-09-29 Verified By:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
ALS4-1032-225 Insert		Purchased	No			190	Each	1,852.0000	6	12			

Location	Loc Qty	Loc Code
ST282 118696.	1852	
110768	62	
118386	860	
118966	930	

12. BR 11-10-13

ALS4-428-165 Inserts		Purchased	No			190	Each	489.0000	2	4			
-------------------------	--	-----------	----	--	--	-----	------	----------	---	---	--	--	--

Location	Loc Qty	Loc Code
FP	471	
117769 ✓	471	
FP-B	18	
114172	18	

BR 11-10-13

ALS7-1032-130 Insert		Purchased	No			190	Each	1,177.0000	2	4			
-------------------------	--	-----------	----	--	--	-----	------	------------	---	---	--	--	--

Location	Loc Qty	Loc Code
ST281	1000	
118966 ✓	1000	
ST282	177	
117717	31	
118386	146	

BR 11-10-13

M6061T6T3.500W.375 6061-T6 RD Tube 3.50 X .375 W		Purchased	No			100	f	12.9631	2.55	5.3684211			
---	--	-----------	----	--	--	-----	---	---------	------	-----------	--	--	--

Location	Loc Qty	Loc Code
MAT	12	
118071	12	
MAT014	0.9631	
117392	0.9631	

5.3684211 mmm 11/10/11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 74829
Description: Skidtube Insert		Part Number: D3510-041
Inspection Dwg: D3510	Rev: C	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø3.300	+/-0.010	3.301	✓		vern	CWC-08
2.990 Ø2.900	+/-0.010	2.939	✓		"	
Ø2.750	+/-0.010	2.740	✓		"	
R0.25 x 0.066	+/-0.010	0.25 x 0.066	✓			
15.00	+/-0.030	15.00	✓		tape	
0.063 x 45°	+/-0.010 x 0.5°	0.063 x 45°	✓		vern	CWC-08
0.125 x 45°	+/-0.010 x 0.5°	0.125 x 45°	✓		"	
5.270	+/-0.010	5.280	✓		"	
3.265	+0.000/-0.010	3.258	✓		"	
30.50	+/-0.030	30.500	✓		tape	
9.515	+/-0.010	9.516	✓		vern CWC-2	
6.875	+/-0.010	6.875	✓		"	
13.750	+/-0.010	13.750	✓		31006 Height gauge	
1.600	+/-0.010	1.600	✓		"	
2.165	+/-0.010	2.165	✓		"	
6.735	+/-0.010	6.745	✓		Vern CWC-02	
2.981	+/-0.010					
2.434	+/-0.010					
1.036	+/-0.010					
Ø0.266	+0.006/-0.001	0.266	✓		Vern FK-04	
Ø0.391	+/-0.010	0.392	✓		Vern FK-04	
Ø0.516 x 0.100	+/-0.010	0.520 x 0.103	✓		Vern FK-04	

measured by: *mm.v*
Date: 11/10/11

Audited by: *[Signature]*
Date: 11/10/12

Prototype Approval: N/A
Date: N/A

Rev	Date	Change	Revised by	Approved
A	09.06.01	New Issue	KJ <i>[Signature]</i>	<i>[Signature]</i>

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

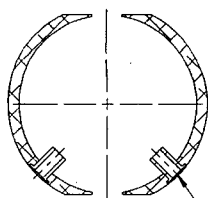
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

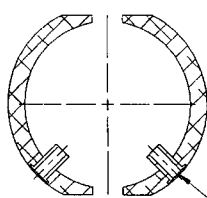
NOTE: Date & initial all entries

D3510-041 SKIDTUBE INSERT



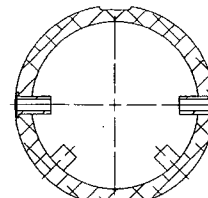
SECTION A-A

AFTER FINISH,
INSTALL AELS-1032-130
(2 PLACES)



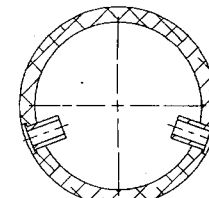
SECTION B-B

AFTER FINISH,
INSTALL AELS-1032-225
(4 PLACES)



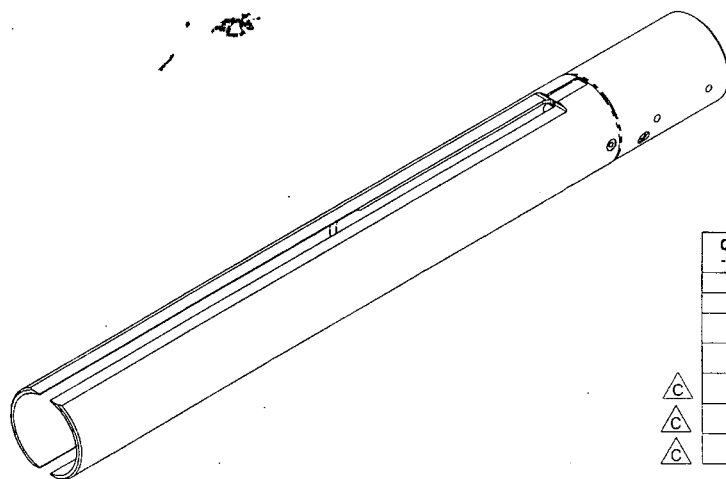
SECTION C-C

AFTER FINISH,
INSTALL AELS-1032-225
(2 PLACES)



SECTION D-D

AFTER FINISH,
INSTALL ALS4-428-165
(2 PLACES)



PARTS LIST

QTY -041	PART NUMBER	DESCRIPTION
X	D3510-041	SKIDTUBE INSERT
1	D6016-065	EXTRUSION
2	AELS-1032-130	INSERT
6	AELS-1032-225	INSERT
2	ALS4-428-165	INSERT



C	UPDATE DRAWING FORMAT AND CLARITY FOR MFG. CHANGE INSERTS FOR EASE OF INSTALLATION	PH	07.10.04
B	UPDATE DIMENSIONS	PH	06.09.20
A	NEW ISSUE	PH	06.04.21
REV.	DESCRIPTION	BY	DATE
DESIGN	PH	DART AEROSPACE USA, INC. PORT HADLOCK, WA	
DRAWN	PH		
CHECKED	PH	DRAWING NO.	REV. C
MFG. APPR.	PH	D3510	SHEET 1 OF 3
APPROVED	PH	TITLE	SCALE
DE APPR.	PH	SKIDTUBE INSERT	1:3
DATE	07.10.04	<small>COPYRIGHT © 2007 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COMPILED OR COMMUNICATED TO ANY OTHER PERSON OR ENTITY WITHOUT PERMISSION FROM DART AEROSPACE USA, INC.</small>	

RELEASED
07.11.14

Dart Aerospace Ltd

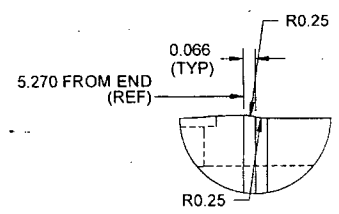
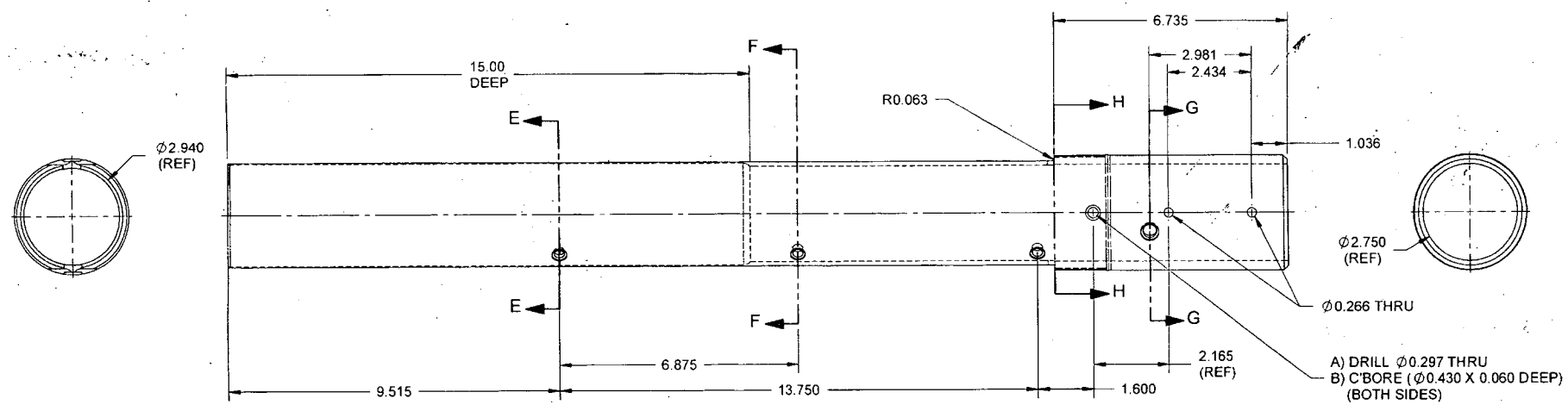
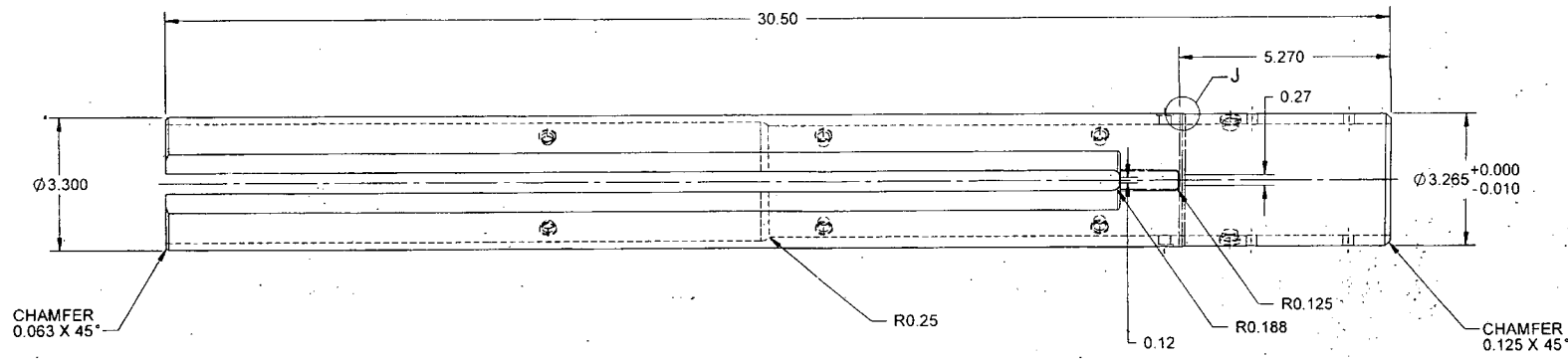
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



MACHINING DETAIL
 1 (MAKE FROM D6016-065 EXTRUSION)

- NOTES:**
- 1) MATERIAL: MAKE FROM D6016-065 EXTRUSION
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.015 MAX
 - 6) IDENTIFICATION: N/A
 - 7) WEIGHT: 5.50 lbs

DESIGN		DART AEROSPACE USA, INC.	
DRAWN		PORT HADLOCK, WA	
CHECKED		DRAWING NO	REV. C
MFG. APPR.		D3510	SHEET 2 OF 3
APPROVED		TITLE	SCALE
DE APPR.		SKIDTUBE INSERT	1:3
DATE	07.10.04	COPYRIGHT © 2007 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED TO THE EMPLOYEE UNDER A "WAT-1" ID NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

RELEASED
 07-11-18

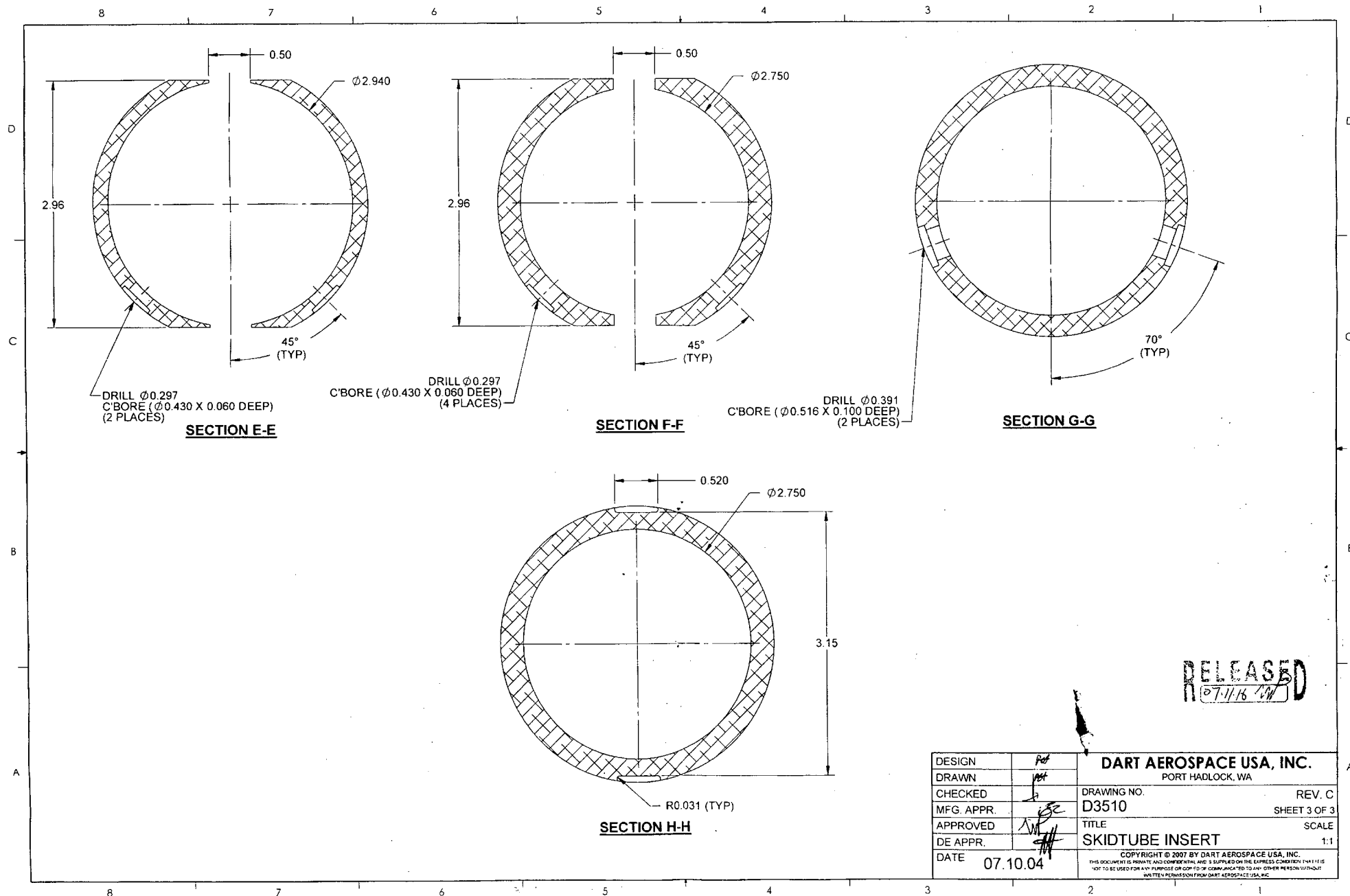
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



RELEASED
07/11/16

DESIGN	Rev	DART AEROSPACE USA, INC.	
DRAWN	Rev	PORT HADLOCK, WA	
CHECKED	Rev	DRAWING NO.	REV. C
MFG. APPR.	Rev	D3510	SHEET 3 OF 3
APPROVED	Rev	TITLE	SCALE
DE APPR.	Rev	SKITUBE INSERT	1:1
DATE	07.10.04	COPYRIGHT © 2007 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR FOR ANY COMMUNICATION TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries